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Treatability Study Work Plan Addendum

for

Pilot-Scale AS/SVE Sandy Branch Landfill

Marine Corps Air Station

Cherry Point, North Carolina

Atlantic Division
Naval Facilities Engineering Command

Contract Number N62472-90-D-1298

Contract Task Order 0265

October 1996

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TREATABILITY STUDY WORK PLAN
ADDENDUM
FOR
PILOT-SCALE AS/SVE
SANDY BRANCH LANDFILL

MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
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Environmental Restoration Branch, Code 1823
Naval Facilities Engineering Command
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1.0 SCOPE CHANGE

Brown & Root Environmental (B&R Environmental) has been directed to perform additional field investigation activities associated with Site 16 located at the Marine Corps Air Station, Cherry Point (MCAS Cherry Point) in Cherry Point, North Carolina. This addendum details the additional field investigation activities to support the design of the remediation system for Site 16.

The objective of this Treatability Work Plan Addendum for CTO 265 is to obtain information from the additional field work to assist in model refinement and improving the design parameters. The additional data intended to be derived from the additional field activities include the following:

- Depth and limits of the Yorktown confining unit (CU)
- Vertical extent of contamination
- Subsurface geotechnical data

2.0 DESCRIPTION OF WORK

The additional field activities include installation of permanent monitoring wells, soil borings, soil and groundwater sampling, Investigation Derived Waste (IDW) management, and surveying. It is anticipated that two (2) Upper Yorktown monitoring wells, three (3) Lower Yorktown monitoring wells, and four (4) soil borings will be required to provide the necessary information.

3.0 SOIL BORING AND WELL INSTALLATION

The general approach to locating the confining unit and installing the wells are detailed on Figures 1 and 2 and will be as follows. Beginning at well cluster S3W1/S3W2/S3W3 and going in a straight line approximately 1/3 of the distance towards well cluster 16GW04/16GW24, the first soil boring will be installed (Proposed Boring 1 on Figure 1). If the CU is detected, the second boring will be installed 2/3 of the distance from S3W1 to 16GW24 (Proposed Boring 2A on Figure 1), if the CU is not detected, the second boring will be installed 1/2 of the distance between the first boring and S3W1 (Proposed Boring 2B on Figure 1). Proposed Soil Boring 2B on Figure 1 may require relocation due to physical obstructions in the field. A second line of borings will be installed in a similar fashion approximately 500 to 700 feet south of the first (Proposed Borings 3, 4A, and 4B on Figure 1). The second line of borings will utilize any information gained from the first borings. The two (2) borings closest to the edge of the CU, where the CU is not detected, will be converted into monitoring wells screened to straddle the Lower Surficial and Upper Yorktown aquifers. The wells will be constructed of 2 inch diameter polyvinyl chloride (PVC) with a minimum 10 foot screen length. The bottom of the well will be set at approximately 45 feet below the groundwater surface. If the CU is detected in all borings, no shallow wells will be installed.

Three (3) deep (Lower Yorktown) monitoring wells (identified as A, B, and C on Table 1) will be installed to provide information related to the vertical extent of contamination. One deep well will be installed, as a cluster well, at each of the above shallow wells. Note: If no shallow wells are installed due to the presence of the Yorktown CU, deep wells will not be installed at these locations. In addition, one deep well will be installed with the existing well cluster at 16GW04/16GW24, regardless of the presence of the Yorktown CU. Deep wells will also be constructed of 2 inch diameter PVC with a minimum 10 foot screen length. The wells will be set with the bottom of the screen located at the top of the Pungo River CU.

Currently it is assumed that the borings and shallow wells will be installed to a depth of fifty (50) feet while the deep wells will be installed to a depth of one hundred (100) feet. In addition, continuous split spoons will be collected throughout the entire depth of each boring and well location (see Figure 2) to verify the presence of landfill debris, the CU, and to accurately log the borehole.

4.0 SAMPLING AND ANALYSIS

Field sample handling requirements shall be in accordance with the Treatability Study Work Plan for Pilot Scale AS/SVE at the Sandy Branch Landfill, B&R Environmental, July 1996. Shelby tube samples will be collected each time the CU is encountered (see Figure 2). A maximum of ten (10) Shelby tubes will be collected during the field effort. A maximum of six (6) of those samples will be selected for analysis in a fixed base laboratory for atterberg limits, moisture content, grain size analysis, vertical permeability, TOC, specific gravity, and pH. To aid in the groundwater modeling effort being conducted for MCAS Cherry Point, the following soil parameters will also be collected from the vadose zone, the Surficial aquifer, and the Yorktown aquifer at one location: atterberg limits, moisture content, grain size analysis, TOC, specific gravity, and pH. See Table 1 for breakdown of field sampling activities.

Finally, one groundwater sample and the necessary QA/QC samples will be collected from each new well and analyzed for total volatile organics (one (1) from each of the new wells (5) plus one (1) trip blank plus one (1) duplicate for a total of seven (7) samples). See Table 2 for holding time and bottleware requirements.

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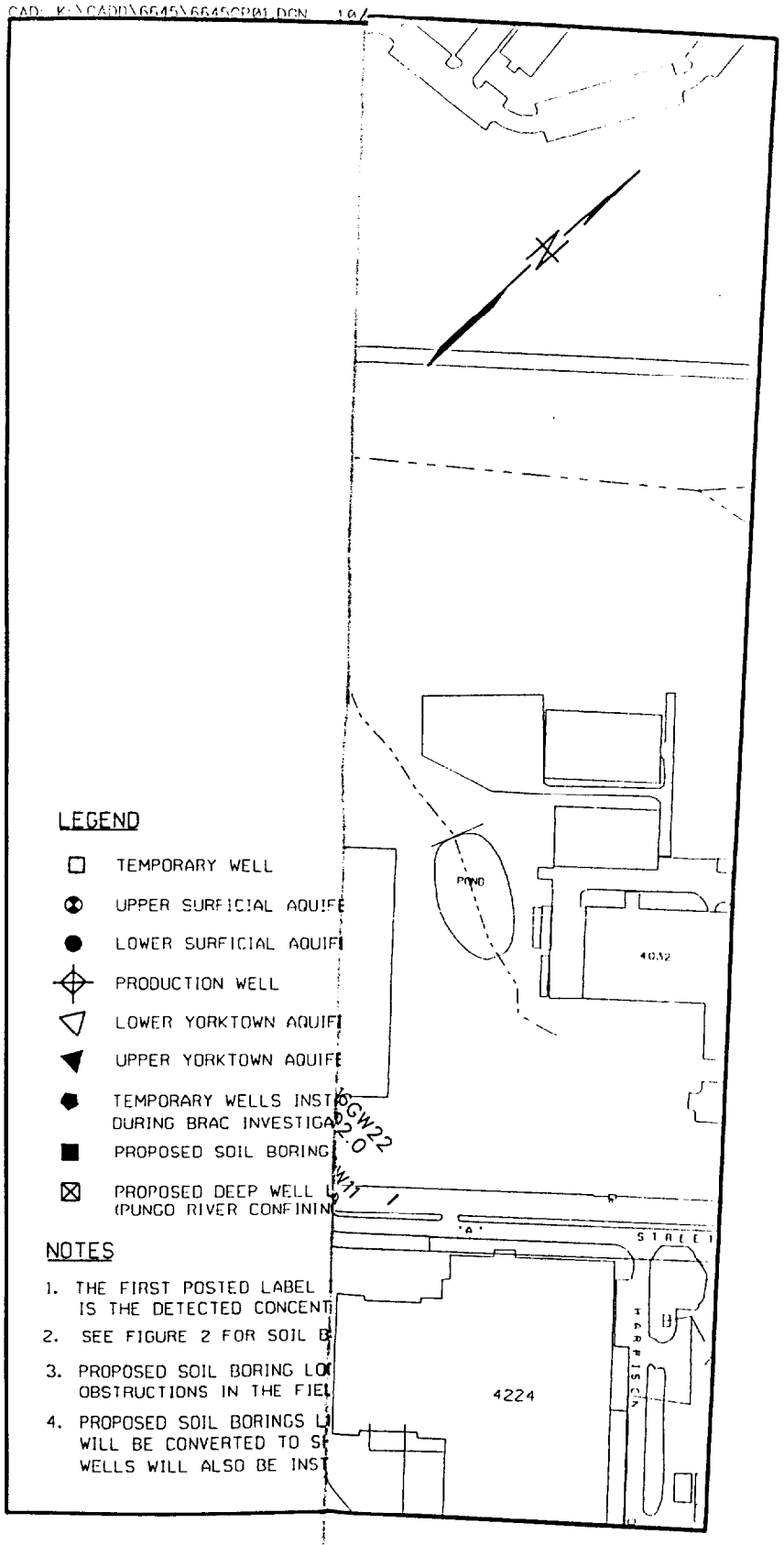

FIGURE 1

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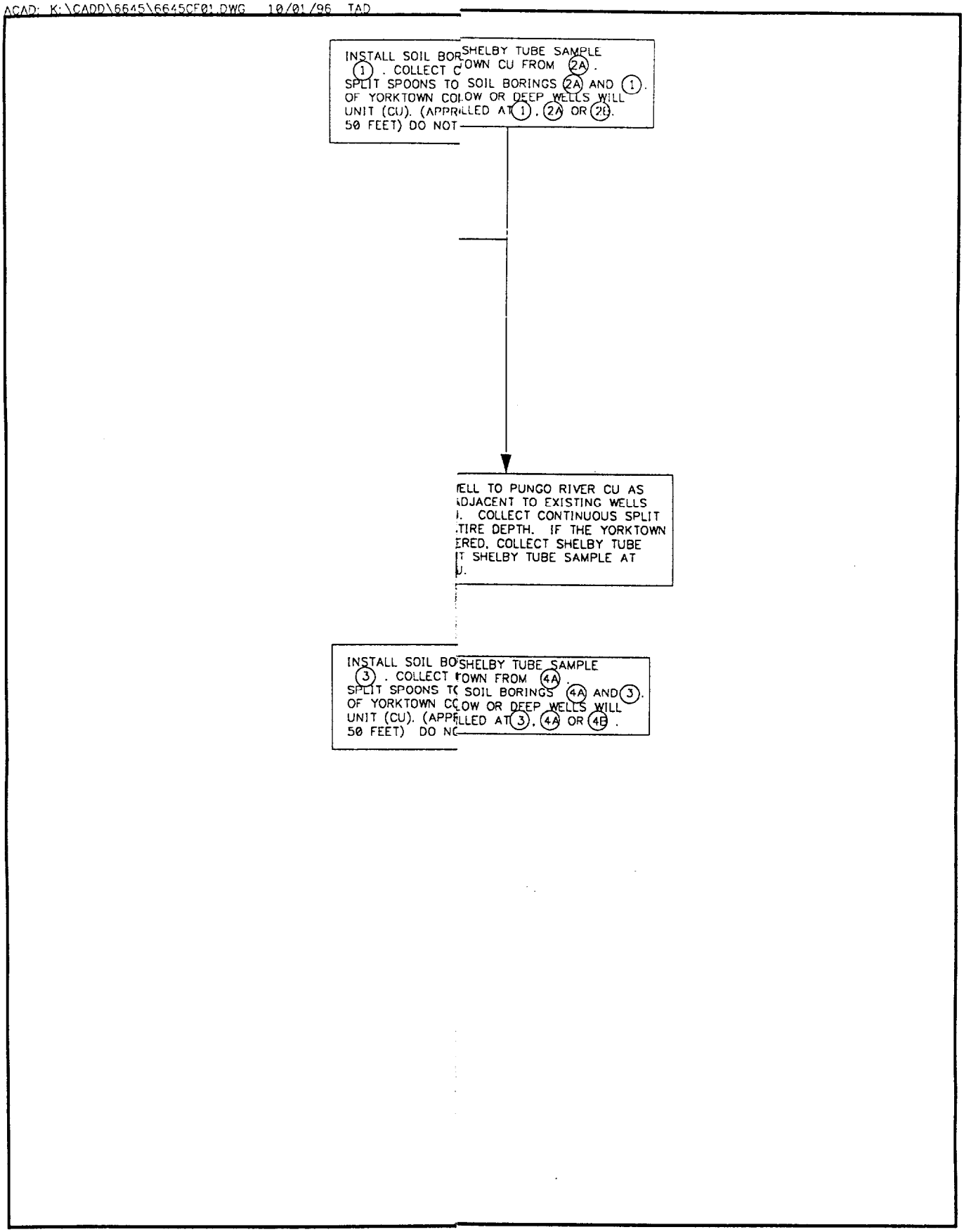

FIGURE 2

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TABLE 1

FIELD SAMPLING ACTIVITIES
MCAS CHERRY POINT, NORTH CAROLINA

	Shelby Tubes[1]	Grab Samples[2]	Groundwater Samples[3]	Split Spoons[4]
Soil Borings/Shallow Wells				
1	1 (Yorktown C.U.)	1 vadose, 1 surficial aquifer, 1 Yorktown aquifer	1	Continuous (~ 25)
2 (A or B)	1 (Yorktown C.U.)	-	-	Continuous (~ 25)
3	1 (Yorktown C.U.)	-	1	Continuous (~ 25)
4 (A or B)	1 (Yorktown C.U.)	-	-	Continuous (~ 25)
Deep Wells				
A[5]	1 (Pungo River C.U.)	-	1	Continuous (~ 25)
B[5]	1 (Pungo River C.U.)	-	1	Continuous (~ 25)
C @ Cluster 16GW04/16GW24	1[6]	-	1	Continuous (~ 50)

(1) Shelby Tubes will be analyzed for: atterberg limits, grain size, vertical permeability, TOC, specific gravity, and pH.
(2) Analyze grab samples for: atterberg limits, grain size, TOC, specific gravity, and pH.
(3) Groundwater samples will be analyzed for TCL volatiles (also collect 1 duplicate + 1 trip blank for TCL volatile analysis).
(4) At locations where deep wells will be installed, the shallow boring should be continued to the depth of the Pungo River C.U. and continuous split spoons collected.
(5) One deep well will be installed at the leading edge of the Yorktown C.U. as a cluster well.
(6) May require collection of 2 Shelby tubes if Yorktown C.U. is present.

TABLE 2

HOLDING TIME AND BOTTLEWARE REQUIREMENTS
MCAS CHERRY POINT, NORTH CAROLINA

	Analysis	Bottleware	Preservation	Holding Time
Groundwater	TCL Volatile Organic Compounds SW-846 8260	(3) 40ml volatile vials with Teflon-lined septum	Add hydrochloric acid to pH <2 and cool to 4°C	14 day
Soil (Grab)	Atterberg Limits Moisture Content/ Particle Size Analysis TOC Specific Gravity pH	8 oz. clear wide mouth jar with Teflon-lined closure	None	None
Soil (Shelby Tube)	Atterberg Limits Moisture Content/ Particle Size Analysis Vertical Permeability TOC Specific Gravity pH	Undisturbed Shelby Tube with capped ends	None	None